(12) UK Patent Application (19) GB (11) 2 362 814 (13) A

(43) Date of A Publication 05.12.2001

(21) Application No 0113286.9

(22) Date of Filing 01.06.2001

(30) Priority Data
(31) 0013452 (32) 02.06.2000 (33) GB

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(51) INT CL[7]
C11D 3/38

(52) UK CL (Edition S)
A4F FNT
C5D DHX D123 D151 D180 D182
C6Y YB Y115 Y116

(56) Documents Cited
GB 2335925 A WO 97/25865 A US 5336424 A
WPI Abstract Accession No. 1991-168479 & JP 3101885
WPI Abstract Accession No. 1990-070259 & JP 2021999

(58) Field of Search
UK CL (Edition S) A4F FNT
Online: WPI, EPODOC, PAJ

(54) Abstract Title
Urinal cleaning method using a cleaning composition containing a bacteria or an enzyme

(57) A urinal cleaning method involves applying a composition to the urinal, where the composition includes one or more bacteria and/or enzymes which will react with constituents of urine, in such manner that the one or more bacteria and/or enzymes will be retained in the U-bend. The urinal need not be flushed each time it is used, thus vastly reducing the amount of water required. For example, public toilets may be cleaned with bacteria/enzyme containing composition once a day, and need not be flushed in between cleaning. The cleaning composition may in the form of a liquid or a solid. If in the form of a liquid, a thickening agent, a surfactant, a fragrance and a stabilising agent such as citric acid may be included in the composition. If in the form of a solid, a thickening agent, a surfactant are preferably included. Preferably all ingredients are biodegradable. The bacteria is preferably bacillus subtilis.

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URINAL CLEANING ROUTINE

Field of the Invention

This invention relates to a urinal cleaning routine.

Urinals are typically cleaned by flushing, which is normally carried out at regular intervals under the control of a programmable timer.

Urinal block compositions are often used to deodorise and clean urinals and one example of a composition which has been developed for this purpose is described in US Patent Specification No. 5,336,424. Regular flushing of the urinal is still required, and this involves the consumption of large volumes of water.

It is accordingly an object of the present invention to provide an improved urinal cleaning routine.

SUMMARY OF THE INVENTION

According to the present invention there is provided a urinal cleaning routine which includes:-

a) effecting cleaning of a urinal having a U-bend fitted to the discharge outlet of the urinal,

b) applying a composition to the urinal, which composition includes one or more bacteria and/or enzymes which will react with constituents of urine, in such manner that the one or more bacteria and/or enzymes will be retained in the U-bend, and

c) not flushing the urinal between successive cleaning operations.

For a urinal which is in regular daily use, the cleaning operation may be carried out on a daily basis whereas, for a urinal which is located in a building such as an office block or school which is not occupied every day, the cleaning operation may be carried out on each day that the building is in use.

The composition applied to the urinal may be in the form of a liquid which is sprayed on to the urinal (adjacent the discharge outlet thereof) or in the form of blocks or pellets which are placed in the urinal.

If the composition is in the form of a liquid, it preferably includes a thickening agent, a surfactant, a fragrance and a stabilising agent, such as citric acid.

If the composition is in solid form, it again preferably includes a thickening agent, a surfactant and a fragrance. The composition may be in the form of a soluble powder or in the form of a soluble block. It may alternatively be in the form of a paste. The composition may also include a colorant, a soap, a plant extract and alcohol.

All the ingredients of the composition are preferably biodegradable.

Bacillus subtilis is the preferred bacterium.

Description of the Preferred Embodiment

A liquid formulation is prepared by adding the following ingredients to water and mixing them together in a high-shear dispersion blender:-

a) thickening gum	0.2 to 0.5% by weight,
b) preservative	0.2 to 0.5% by weight,
c) surfactant	0.1 to 0.3% by weight,
d) fragrance	0.1 to 0.2% by weight,
e) Bacillus subtilis	1 to 2.5% by weight, and
f) citric acid	0.5 to 1% by weight.

If desired, a dye or colouring agent may also be included in the formulation. Although Bacillus subtilis is the preferred bacterium, other bacteria and enzymes may be employed.

To clean a urinal bowl or trough having a U-bend attached to its discharge outlet, a container is filled with 3 litres of warm water, the bowl or trough is dampened and scrubbed (if required) and swilled with the remainder of the water. This will flush through unwanted debris, such as hair, ash and dirt.

The liquid formulation is then sprayed onto the urinal bowl or trough from an adjustable, misting, directional nozzle up to the point of run off and the applied formulation is then agitated with a cleaning brush to remove any dirty marks. The applied formulation is then lightly rinsed from the urinal bowl or trough using a fine spray of water, using a minimal volume of water so that the applied formulation is retained in the U-bend fitted to the discharge outlet of the urinal bowl or trough.

The Bacillus subtilis acts on those elements in urine, which would tend to produce blockages, uric scale formulation and malodours, to degrade, alter or break them down.

The urinal bowl or trough is not flushed until the next cleaning operation is carried out, and this will typically be twenty four hours later.

As an alternative to using a liquid composition, the composition may be in the form of a solid block. The ingredients may include a low Melting Point water-soluble surfactant, which is heated to a temperature just sufficient to convert it into liquid form and then the bacterium and other ingredients are added and mixing

effected in a high-speed blender. The mix is then allowed to solidify and formed into blocks of a suitable size such that a single block (or a number of blocks) can be added to a urinal bowl or trough after a cleaning operation has been carried out, as outlined above, or added just once a week.

Trials have been carried out using the formulations described above and, in each case, highly satisfactory results have been obtained. There were no urine smells and, in some cases, where the traps had been subject to scale, the majority of the previously formed scale had been removed.

An important advantage of the present invention is that, as no regular flushing is carried out, the volume of water used by a urinal is reduced to a minimal amount, i.e. that required to carry out a daily cleaning operation. Urinal cleaning will require a small amount of water and, possibly once a week, a small amount of biologically friendly soap.

The savings obtained by reducing the volume of water which is consumed far outweigh the cost of the cleaning formulation.

Claims:-

1. A urinal cleaning routine which includes:-

a) effecting cleaning of a urinal having a U-bend fitted to the discharge outlet of the urinal,

b) applying a composition to the urinal, which composition includes one or more bacteria and/or enzymes which will react with constituents of urine, in such manner that the one or more bacteria and/or enzymes will be retained in the U-bend, and

c) not flushing the urinal between successive cleaning operations.

2. A routine as claimed in Claim 1, in which, for a urinal which is in regular daily use, the cleaning operation is carried out on a daily basis.

3. A routine as claimed in Claim 1, in which, for a urinal which is located in a building which is not occupied every day, the cleaning operation is carried out on each day that the building is in use.

4. A routine as claimed in any one of the preceding claims, in which the composition applied to the urinal is in the form of a liquid which is sprayed on to the urinal (adjacent the discharge outlet thereof).

5. A routine as claimed in any one of Claims 1 to 3, in which the composition is in the form of blocks or pellets which are placed in the urinal.

6. A routine as claimed in Claim 4, in which the liquid composition includes a thickening agent, a surfactant, a fragrance and a stabilising agent, such as citric acid.

7. A routine as claimed in Claim 5, in which the solid composition includes a thickening agent, a surfactant and a fragrance.

8. A routine as claimed in Claim 6 or Claim 7, in which the composition also includes a colorant, a soap, a plant extract and alcohol.

9. A routine as claimed in any one of the preceding claims, in which all the ingredients of the composition are biodegradable.

10. A routine as claimed in any one of the preceding claims, which includes the use of Bacillus subtilis.

11. A urinal cleaning routine substantially as hereinbefore described.

The Patent Office

INVESTOR IN PEOPLE

Application No: GB 0113286.9 **Examiner:** Kathryn Orme
Claims searched: 1-11 **Date of search:** 13 August 2001

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): A4F FNT

Int Cl (Ed.7):

Other: Online: WPI, EPODOC, PAJ

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 2335925 A	(CHEMIPHASE) see especially pages 1, 2 and 7 and fig 1	X=1,9,10
Y	WO 97/25865	(SYBRON CHEMICAL) see page 8 lines 7-14	7
X, Y	US 5336424	(VAN VLAHAKIS) see especially col 6 lines 44-69, col 7 lines 1-54 and fig 1	X=1,2,3,5 Y=7
X	WPI Abstract Accession No. 1991-168479 & JP 3101885 (Sawairi) 26/04/1991 (see abstract)		1,2,3,5
X	WPI Abstract Accession No. 1990-070259 & JP 2021999 (Kubota) 24/01/1990 (see abstract)		1,2,3,5

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.